

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1 and 4-19 are now pending in this application.

Rejection under 35 U.S.C. § 103

Claims 1 and 4-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,067,191 to Derflinger *et al.* (hereafter "Derflinger") in view of Materials Letters 57, 3305-3310, to Yang *et al.* (hereafter "Yang"). This rejection is respectfully traversed. Applicant does not necessarily agree that Yang is prior art and reserves the right to remove Yang as prior art.

Derflinger discloses a metallic intermediate layer 3, a further intermetallic layer 2b, and a slide layer system 4 that includes a slide layer 4a. See Derflinger at col. 2, lines 48-55, 64-67, and col. 2, lines 1-5. The metallic intermediate layers 3, 2b appear to be the same metal as in the hard material layer 2a. See Derflinger at col. 2, lines 56-59, and col. 3, lines 25-30. Derflinger also discloses that the slide system "may additionally comprise" a terminating carbon layer, such as a DLC layer. See Derflinger at col. 4, lines 49-51.

However, Derflinger does not disclose or suggest a substrate covered at least partially with a layered coating comprising, among other things, a transition layer deposited on said second metal layer, said transition layer consisting of at least one carbide of an element of group IVB, group VB or group VIB, as recited in claim 1. Claims 4-19 depend from claim 1.

Applicant notes that it is permissible to use “consisting of” language within a body of a claim under U.S. practice because the “consisting of” language limits only the element set forth in the clause where the “consisting of” language appears. See MPEP § 2111.03.

Derflinger discloses that the slide layer 4a is formed of a carbide of at least one metal and dispersed carbon. See Derflinger at col. 3, lines 2-5, 13-18. In other words, the slide layer 4a would include a metal carbide and dispersed carbon, such as TiC and C or CrC and C, as indicated in examples 2 and 4 of Table 1 of Derflinger. Because the slide layer 4a of Derflinger includes dispersed carbon in addition to the metal carbide and dispersed carbon is not a carbide, the slide layer 4a of Derflinger does not consist of at least one carbide of an element of group IVB, group VB or group VIB, as recited in claim 1.

Nor does Derflinger disclose or suggest a substrate covered at least partially with a layered coating comprising, among other things, a transition layer and a hard carbon coating, wherein said hard carbon coating is deposited directly onto the transition layer, as recited in claim 1.

Instead, Derflinger discloses that the slide layer 4a of metal carbide and dispersed carbon would be the top layer. See Figure 1, 3, and 5 of Derflinger. Derflinger further discloses a metal carbide layer 4b between the slide layer 4a and the intermediate layer 3. See Derflinger at col. 3, lines 31-39, and Figure 5. However, the slide layer 4a is on top of the metal carbide layer 4b. Furthermore, Derflinger does not disclose or suggest that the DLC layer would be formed directly on the carbide layer 4b. In fact, one of ordinary skill in the art would have understood that the slide layer 4a would be deposited between the carbide layer 4b and a DLC film to promote adhesion due to the carbide and dispersed carbon composition of the slide layer 4a.

Yang discusses a diamond-like nanocomposite film but does not remedy the deficiencies of Derflinger.

For at least the reasons discussed above, the combination of Derflinger and Yang does not disclose or suggest all of the features of claim 1. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 13-15

Claims 13-15 depend from claim 1 and are allowable over Derflinger and Yang for at least the reasons discussed above.

Claim 13 further recites “wherein the adhesion of said layered coating expressed by means of the Rockwell C test is better than HF2.”

Claim 14 further recites “wherein the adhesion of said layered coating expressed by means of the critical load to obtain delamination is higher than 35 N.”

Claim 15 further recites “wherein said layered coating has a hardness of at least 10 GPa.”

The Office argues on pages 2-3 of the Office Action that Derflinger, or the combination of Derflinger and Yang, would provide a substrate with a composition and thickness of substantial similarity, which would be expected to have substantially similar properties to the substrates of claims 13-15. Applicant respectfully disagrees.

The Office appears to be arguing that the coating of Derflinger, or the combination of Derflinger and Yang, would inherently have the features recited in claims 13-15. Applicant notes that to rely upon inherency, a basis in fact and/or technical reasoning to reasonably support a determination that an allegedly inherent characteristic necessarily flows from the disclosure of the prior art must be provided. See MPEP § 2112, Part IV, *citing Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). Any inherent disclosure in the prior art may not be established by probabilities or possibilities. See MPEP § 2112, Part IV, *citing In re Robertson*, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

The Office appears to be relying on the possibility or probability that the coating of Derflinger, or Derflinger and Yang, would provide the features of claims 13-15. The Office has not provided a basis in fact and/or technical reasoning that support a determination that the coating of Derflinger, or Derflinger and Yang, would necessarily provide the features of claim 13-15. Reconsideration and withdrawal of the rejections of claims 13-15 is respectfully requested.

Claim 17

Claim 17 depends from claim 1 and is allowable for at least the reasons discussed above. Claim 17 further recites “wherein the diamond-like nanocomposite coating comprises 30-70 at% C, 20-40 at% H, 5-15 at% Si, and 5-15 at% O.”

The Office argues on page 3 of the Office Action that it would have obvious to optimize the composition of the coating of Derflinger and Yang to provide the substrate of claim 17. Applicant respectfully disagrees.

A parameter must first be recognized as a result-effective variable before the determination of the optimal or workable ranges of the variable can be characterized as routine experimentation. See MPEP § 2144.05, Part IIB, *citing In re Antonie*, 195 USPQ 6 (CCPA 1977) and *In re Boesch*, 205 USPQ 215 (CCPA 1980). The Office has not provided any evidence that Derflinger or Yang has recognized the composition of a DLN coating as a result-effective variable. Although Yang discusses the hardness, wear resistance, and adhesion of a DLN coating, the Office has not demonstrated that Yang has recognized the composition of a DLN coating as a result-effective variable. Thus, it would not have been obvious to optimize the coating of Derflinger and Yang to provide the substrate of claim 17, as argued by the Office.

For at least the reasons discussed above, reconsideration and withdrawal of the rejection of claim 17 is respectfully requested.

Conclusion

Applicant submits that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment,

to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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